CLAIM + DETAILED DESCRIPTION

[Claim(s)]
[Claim 1](i) A trunk injection solubilization tablet characterized by containing a solvent which solubility to water can mix with a pesticide of 5 g/l or less and/or a disinfectant, a solubilizing agent in which (ii)HLB contains 12 or more nonionic interface active agents, (iii) water, and/or water.
[Claim 2]The trunk injection solubilization tablet according to claim 1 whose solubility to water of said pesticide and/or a disinfectant is 1 g/l or less.
[Claim 3]The trunk injection solubilization tablet according to claim 1 or 2 which are at least one sort of pesticides chosen from a group which said pesticide comprises from an organic phosphorus system pesticide, a benzimidazole system insecticide, the Cava mate system pesticide, a synthetic pyrethroid pesticide, an insect growth controlling agent, an acaricide, and a macrolide antibiotic.
[Claim 4]Said disinfectant A PORIHARO alkylthio system disinfectant, a benzimidazole system disinfectant, Claims 1-3 which are at least one sort of disinfectants chosen from a group which comprises an dicarboxyimide system disinfectant, a carboxyamide system disinfectant, an acyl alanine system disinfectant, ergosterol biosynthetic inhibitor, and an antibiotic are the trunk injection solubilization tablets of a description either.
[Claim 5]Said nonionic interface active agent Polyoxyethylene castor oil, polyoxyethylene hydrogenated castor oil, Polyoxyethylene alkyl ether, polyoxyethylene alkyl phenyl ether, Polyoxyethylene-alkyl-phenyl-ether formaldehyde condensate, Polyethylene glycol fatty acid ester, polyoxyethylene polyoxypropylene alkyl ether, Sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid ester, Polyoxyethylene sorbitol fatty acid ester, polyglyceryl fatty acid ester, Claims 1-4 which are at least one sort of nonionic interface active agents chosen from a group which changes from sucrose fatty acid ester and propylene glycol mono- fatty acid ester are the trunk injection solubilization tablets of a description either.
[Claim 6]Claims 1-5 which are at least one sort of solvents chosen from a group which a solvent which can be mixed with said water comprises from lower alcohol, polyhydric alcohol, glycol esters, acetone, acetonitrile, tetrahydrofuran, and dioxane are the trunk injection solubilization tablets of a description either.
[Claim 7]A dieback prevention method of the pines which exterminate a pine wood nematode (Bursaphelenchus xylophilus) by pouring an effective amount of the trunk injection solubilization tablet according to claim 1 to 6 into a trunk of pines, and making the tree inside of the body carry out a turn of tide.

[Detailed Description of the Invention]
[0001]
[Industrial Application][this invention] [about the dieback prevention method of a trunk injection solubilization tablet and the pines by the tablet] It is related with the dieback prevention method of the solubilization tablet for trunk injections which has improved the tree migration nature of said medicine, and the pines by the tablet by using solubility by the solvent and the specific nonionic interface active agent which can mix still more detailed difficulty water-soluble pesticide and/or disinfectant with water and/or water.
[0002]
[Description of the Prior Art]In order to prevent effectively the dieback of the trees (especially pines) by the noxious organism in trees, the trunk injection agent is used from the former. Since the medicine by which trunk injection was carried out dissolves in the water of the tree inside of the body which is absorbed originally and moves to a leaf through a temporary lead pipe and shifts to a branch etc., the solubility over a certain amount of water is needed for the trunk injection agent. The solubility to water has reported Matsuura about this only for the medicine over 1000 ppm to have shown validity to the pine wood nematode disease by trunk injection (plant protection, 38 volumes, p27 - 1984 [31 or]).
[0003]Since the solubility to water is low in a commercial trunk injection agent, a considerable quantity of medicines can start crystal deposition around a pouring part, and it can observe that **** prevention of moisture has occurred. This is considered that the crystal deposited without the ability of a medicine to dissolve in stem flow.
[0004]Thus, since the medicine by which trunk injection was carried out is not dissolved, shift of the medicine to the tree inside of the body is not performed smoothly, but it has been a problem that the effect over the noxious organism of the tree inside of the body does not continue stably as the result.
[0005]
[Problem to be solved by the invention][the place which this invention is originated in order to solve the problem of the above-mentioned conventional technology, and is made into the purpose] By making a poorly soluble pesticide and disinfectant water at solubility, the translatability of the medicine of the tree inside of the body is raised, and it is in providing the dieback prevention method of the solubilization tablet for trunk injections which prevented the dieback of trees effectively, and the pines by the tablet.
[0006]
[Means for solving problem]This invention persons reached completion of this invention, as a result of considering wholeheartedly the solubilization tablet for trunk injections which is excellent in the stability and durability of an effect to achieve the above objects.
[0007]That is, this invention is (i). The solubilizing agent in which a pesticide of 5 g/l or less and/or a disinfectant, and (ii)HLB contain 12 or more nonionic interface active agents in the solubility to water, and (iii) It is a trunk injection solubilization tablet containing the solvent which can be mixed with water and/or water.
[0008]As a pesticide used for this invention, for example Fenitrothion, prothiophos, Organic phosphorus system pesticides, such as Propaphos, phosthiazate, and pyraclophos, a benzimidazole system insecticide, the Cava mate system pesticide, a synthetic pyrethroid pesticide, an insect growth controlling agent, an acaricide, a macrolide antibiotic, etc. are mentioned. They can be used for two or more sorts, these being able to be independent or using together.

[0009]As a disinfectant used for this invention, a PORIHARO alkylthio system disinfectant, a benzimidazole system disinfectant, an acyl alanine system disinfectant, ergosterol biosynthetic inhibitor, an antibiotic, etc. are mentioned, for example. They can be used for two or more sorts, these being able to be also independent or using together.
[0010]It is indispensable that HLB (hydrophile - lipophile balance) contains 12 or more nonionic interface active agents in a solubilizing agent used by this invention. In a solubilizing agent used for this invention, as an anionic surfactant, for example Alkylsulfuric acid ester, Alkane sulfonic acid, alkylbenzene sulfonic acid, alkyl phosphoric ester, [N-acyl sarcosine salts, N-acyl alanine salts, and succinate] As cationic surfactant, alkylamine, alkyl trimethylammonium salts, Dialkyl dimethylannmonium salts and alkyldimethyl benzylammonium salts, [and alkyl pyridinium salts] As a nonionic interface active agent, polyoxyethylene castor oil, polyoxyethylene hydrogenated castor oil, Polyoxyethylene alkyl ether, polyoxyethylene alkyl phenyl ether, Polyoxyethylene-alkyl-phenyl-ether formaldehyde condensate, Polyethylene glycol fatty acid ester, polyoxyethylene polyoxypropylene alkyl ether, [sorbitan fatty acid esters polyoxyethylene sorbitan fatty acid ester, polyoxyethylene sorbitol fatty acid ester, polyglyceryl fatty acid ester, sucrose fatty acid ester, and propylene glycol mono- fatty acid ester] Furthermore, there are aminocarboxylic acid, carboxybetaines, and sulfobetaine as an ampholytic surface active agent.
[0011][as a solvent which can be mixed with water used for this invention] For example, lower alcohol, such as methanol and ethanol, ethylene glycol, Propylene glycol, diethylene glycol, 1,3-butanediol, Polyhydric alcohol, such as an isoprene glycol, acetone, acetonitrile, Glycol esters, dioxanes, etc., such as glycol ethers, such as polar solvents, such as tetrahydrofuran, and ethylene glycol monomethyl ether, and ethylene glycol monoacetate, are mentioned.
[0012]Although each amount of ingredients of a trunk injection solubilization tablet of this invention can be changed suitably, A solvent which mixes a pesticide and/or a disinfectant five to 20weight %, and can mix a solubilizing agent with water and/or water five to 30weight % preferably one to 60weight % one to 50weight % can be contained 30 to 70weight % preferably ten to 80weight %, respectively.
[0013]Although it can carry out by arbitrary methods, combination of each ingredient of a trunk injection solubilization tablet of this invention can manufacture a trunk injection solubilization tablet of this invention easily by a method of adding a solubilizing agent, for example, after dissolving a poorly soluble pesticide and/or a disinfectant in water at a solvent and/or water. On the occasion of application on trees, amount of application of a trunk injection solubilization tablet of this invention can be suitably changed according to a situation of the purpose, time, the age of a tree, and damage, etc. A hole is made in a trunk of pines by drilling, from the hole, a solubilization tablet of this invention is poured into dieback prevention of pines, and a method of exterminating a pine wood nematode can be adopted as it by making the tree inside of the body carry out a turn of tide.
[0014]
[Working example]Next, although an embodiment explains an effect which was excellent in a solubilization tablet of this invention, this invention is not limited to these.
[0015]A dieback prevention examination by a clo pine with a breast high diameter of 10-15 cm was carried out with the following test method about the solubilization tablets 1-6 and the non-solubilizing tablets 7-9 which blended embodiment 1 prothiophos, fenitrothion, and pyraclophos with Table 1 like a description. A result of a dieback prevention examination of composition of the poured-in solubilization tablets 1-6 and the

non-solubilizing tablets 7-9 to Table 1 was shown in Table 2.

[0016]After injecting 100 ml of tablets of Table 1 into the dieback prevention test method pine tree inside of the body, 0.3 ml of highly-virulent pine wood nematode (S6-1) suspensions (100000 animals/(ml)) were inoculated one month afterward, and the dieback prevention effect was judged three months afterward.

[0017]

[Table 1]

表1　　製　剤　の　組　成

成　分　名	可溶化製剤						非可溶化製剤		
	1	2	3	4	5	6	7	8	9
プロチオホス　(*1)	20	20	-	-	-	-	20	-	-
フェニトロチオン	-	-	20	20	-	-	-	20	-
ピラクロホス	-	-	-	-	20	20	-	-	20
可溶化剤A　(*2)	25	-	-	-	-	-	-	-	-
可溶化剤B	20	50	15	-	-	20	-	-	-
可溶化剤C	-	-	30	-	-	-	-	-	-
可溶化剤D	-	-	-	50	-	-	-	-	-
可溶化剤E	-	-	-	-	45	-	-	-	-
可溶化剤F	-	-	-	-	-	30	-	-	-
可溶化剤G	5	-	5	-	5	-	-	-	-
アセトン	30	-	10	30	-	10	80	-	40
メタノール	-	25	15	-	25	15	-	80	40
水	-	5	5	-	5	5	-	-	-

(*1)薬剤の水に対する溶解度

プロチオホス:0.0017g/l　フェニトロチオン:0.014g/l　ピラクロホス:0.033g/l

(*2)表中の各可溶化剤

可溶化剤A：POE(50) 硬化ヒマシ 油(HLB:14.0)

可溶化剤B：POE(30)POP(6)デシルテトラデシルエーテル (HLB:12.0)

可溶化剤C：POE(20)オレイルエーテル (HLB:17.0)

可溶化剤D：POE(20)ノニルフェニルホルムアルデヒド縮合物(HLB:18.0)

可溶化剤E：POE(20)モノオレイン 酸ソルビタン (HLB:15.0)

可溶化剤F：POE(60)テトラオレイン酸ソルビット (HLB:14.0)

可溶化剤G：ジイソオクチルスルホコハク 酸ナトリウム

[0018]

[Table 2]

表2　製剤の枯損防止効果

	試験木数	枯損木数
（本発明の製剤）		
可溶化製剤1	10	0
可溶化製剤2	10	0
可溶化製剤3	10	0
可溶化製剤4	10	0
可溶化製剤5	10	0
可溶化製剤6	10	0
（比較対照製剤）		
非可溶化製剤7	10	5
非可溶化製剤8	10	6
非可溶化製剤9	10	4

[0019]The solubilization tablet of this invention all showed the dieback prevention effect stable compared with the comparative non-solubilizing tablet so that clearly from the test result of the result table 2.
[0020]The dieback prevention examination by a clo pine with a breast high diameter of 10-15 cm was carried out with the following test method about the solubilization tablets 10-15 and the non-solubilizing tablets 16 and 17 which blended embodiment 2 thiabendazole and MIRUBEME cutin with Table 3 like the description. The result of the dieback prevention examination of composition of the poured-in solubilization tablets 10-15 and the non-solubilizing tablets 16 and 17 to Table 3 was shown in Table 4.
[0021]After injecting 50 ml of tablets of Table 3 into the dieback prevention test method pine tree inside of the body, 0.3 ml of highly-virulent pine wood nematode (S6-1) suspensions (100000 animals/(ml)) were inoculated one month afterward, and the dieback prevention effect was judged three months afterward.
[0022]
[Table 3]

表３　　製　剤　の　組　成

成　分　名	可溶化製剤						非可溶化製剤	
	10	11	12	13	14	15	16	17
チアベンダゾール(*3)	10	10	10	-	-	-	10	-
ミルベメクチン	-	-	-	5	5	5	-	5
可溶化剤H　(*4)	8	20	30	-	-	-	-	-
可溶化剤Ｉ	-	-	-	9	15	20	-	-
可溶化剤Ｊ	2	-	-	-	-	-	-	-
可溶化剤Ｋ	-	-	-	1	-	-	-	-
メタノール	50	50	50	60	60	60	90	95
水	30	20	10	25	20	15	-	-

(*3)薬剤の水に対する溶解度

ﾁｱﾍﾞﾝﾀﾞｿﾞｰﾙ:0.014g/l　ﾐﾙﾍﾞﾒｸﾁﾝ:0.0017g/l

(*4)表中の各可溶化剤

可溶化剤Ｈ：POE(21)ﾗｳﾘﾙｴｰﾃﾙ(HLB:19.0)

可溶化剤Ｉ：POE(40) 硬化ﾋﾏｼ 油(HLB:12.5)

可溶化剤Ｊ：ﾗｳﾘﾙ硫酸ﾅﾄﾘｳﾑ

可溶化剤Ｋ：ﾄﾞﾃﾞｼﾙﾍﾞﾝｾﾞﾝｽﾙﾎﾝ酸ﾅﾄﾘｳﾑ

[0023]

[Table 4]

表４　　製剤の枯損防止効果

	試験木数	枯損木数
（本発明の製剤）		
可溶化製剤１０	１０	０
可溶化製剤１１	１０	０
可溶化製剤１２	１０	０
可溶化製剤１３	１０	０
可溶化製剤１４	１０	０
可溶化製剤１５	１０	０
（比較対照製剤）		
非可溶化製剤１６	１０	７
非可溶化製剤１７	１０	８

[0024]The solubilization tablet of this invention all showed the dieback prevention effect stable compared with the comparative non-solubilizing tablet so that clearly from the test result of the result table 4.

[0025]

[Effect of the Invention]In this invention, the use as a trunk injection agent makes a poorly soluble pesticide and/or disinfectant difficult water until now at solubilization.
Therefore, it can use effectively as a trunk injection agent.
The solubilization tablet of this invention can make tree migration nature of a medicine easy, and can improve the durability and stability of an effect over the noxious organism of the tree inside of the body while it prevents generating of phytotoxicity by improving the solubility over the water of a medicine. The solubilization tablet of this invention can provide a more effective tablet than before to the dieback prevention of the pines by a pine wood nematode disease.

[Translation done.]